

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND claims 1 and 4 and ADD new claims 41-43 in accordance with the following:

1. (CURRENTLY AMENDED) A conductor substrate for mounting a semiconductor element, at least a portion ~~thereof mounting of the semiconductor substrate, on which~~ said semiconductor element is to be mounted, being sealed with an insulating resin, wherein an uppermost surface layer of said conductor substrate comprises copper or an alloy thereof, and said conductor substrate is partly or entirely covered with a layer of copper oxide containing a hydroxide formed ~~upon~~ by surface treatment of said conductor substrate.

2. (ORIGINAL) A conductor substrate according to claim 1, wherein said conductor substrate substantially comprises copper or an alloy thereof.

3. (ORIGINAL) A conductor substrate according to claim 1, wherein said conductor substrate substantially comprises a non-copper metal and the uppermost surface layer of said conductor substrate comprises copper or an alloy thereof.

4. (CURRENTLY AMENDED) A conductor substrate according to claim 1, wherein said surface treatment is a forced oxidation treatment which comprises immersing said conductor substrate in a black oxide treatment solution having added thereto an oxidizing agent having an excellent self-reducing force.

5. (PREVIOUSLY PRESENTED) A conductor substrate according to claim 1, wherein said surface treatment is a forced oxidation treatment which comprises anodization of said conductor substrate while immersing said conductor substrate in a black oxide treatment solution.

6. (PREVIOUSLY PRESENTED) A conductor substrate according to claim 1, wherein said insulating resin is a resin comprising a hydroxyl group in the molecule thereof, and a hydrogen bonding force is generated between said hydroxyl group-containing resin and said layer of hydroxide-containing copper oxide.

7. (ORIGINAL) A conductor substrate according to claim 6, wherein said hydroxyl group-containing resin is an epoxy resin.

8. (PREVIOUSLY PRESENTED) A conductor substrate according to claim 1, wherein said conductor substrate is a lead frame.

9. (PREVIOUSLY PRESENTED) A conductor substrate according to claim 1, wherein said layer of hydroxide-containing copper oxide is covering at least a portion of the surface of said conductor substrate except for wire-drawing portions.

10. (PREVIOUSLY PRESENTED) A conductor substrate according to claim 1, wherein said layer of hydroxide-containing copper oxide is covering the whole surface of said conductor substrate.

11. (PREVIOUSLY PRESENTED) A conductor substrate according to claim 1, wherein said conductor substrate is a heat-dissipating plate.

12. (PREVIOUSLY PRESENTED) A conductor substrate according to claim 1, wherein said layer of hydroxide-containing copper oxide has a three-layered structure comprising, in sequence, a cuprous oxide (Cu_2O) layer, a cupric oxide (CuO) layer and a cupric hydroxide ($\text{Cu}(\text{OH})_2$) layer from the side of said conductor substrate.

13. (PREVIOUSLY PRESENTED) A conductor substrate according to claim 1, wherein said layer of hydroxide-containing copper oxide has a thickness in a range of 0.02 to 0.2 μm .

14. (PREVIOUSLY PRESENTED) A conductor substrate according to claim 1, wherein no segregated layer is formed between said conductor substrate and said layer of hydroxide-containing copper oxide when treated under a high-temperature condition.15.

15. (PREVIOUSLY PRESENTED) A conductor substrate according to claim 1, wherein said layer of hydroxide-containing copper oxide comprises needle-like crystals having particle sizes of not larger than 0.5 μm .

16. (PREVIOUSLY PRESENTED) A semiconductor device in which at least one semiconductor element is mounted on a predetermined position of a conductor substrate described in claim 1, and said conductor substrate is sealed with an insulating resin.

17. (ORIGINAL) A semiconductor device according to claim 16, wherein said conductor substrate is substantially entirely sealed with said insulating resin.

18. (PREVIOUSLY PRESENTED) A semiconductor device according to claim 16, wherein said semiconductor device is mounted on a mounting substrate using a solder.

19. (ORIGINAL) A semiconductor device according to claim 18, wherein said solder is a lead-free solder.

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41. (NEW) A semiconductor device, comprising:

a substrate having a surface including a mounting portion to receive and mount thereon a semiconductor element; and

an outermost layer of copper oxide containing a hydroxide substantially covering the substrate surface.

42. (NEW) A semiconductor device as recited in claim 41, further comprising:

an insulating resin covering substantially all of the substrate and the semiconductor element.

43. (NEW) A semiconductor device as recited in claim 41, wherein the outermost

layer is formed by surface treatment of the substrate surface.